

**929. Comparative Nutrition-Vitamins**  
Spring of odd-numbered years. 3(3-0)  
BCH 452 and a previous course on principles  
of nutrition. Interdepartmental with Human  
Nutrition and Foods.  
Chemical and physical properties, standards of  
activity, occurrence, metabolic roles, antivita-  
mins, deficiency and toxicity signs, requirements  
and factors affecting requirements.

**963. Genetics of Breed Improvement**  
Winter. 3(3-0) ANS 461, STT 421.  
Breed improvement. Changing gene frequency.  
Genetic and environmental subdivision of  
phenotypic variance.

**964. Breeding Systems and Plans**  
Spring. 3(3-0) 963.  
Biometric relations between related animals.  
Role of selection in changing populations. The  
effects of different mating systems.

**999. Research**  
Fall, Winter, Spring, Summer. Varia-  
ble credit. Approval of department.

**ANIMAL SCIENCE                      ANS**  
**College of Agriculture and  
Natural Resources**

**101. Animal Science**  
Fall. 5(4-2)  
Survey of the animal industries including his-  
tory, economic geography, anatomy and physi-  
ology, nutrition and feed usage, and systems of  
commercial livestock and poultry production.

**213. Animal Science Seminar**  
Fall. 1(2-0)  
Animal science industries. Industry representa-  
tives will be utilized to discuss particular areas.

**325. Principles of Animal Nutrition**  
Spring. 5(5-0) CEM 132; BCH 200  
recommended.  
Livestock feeds and their nutrients. Functions  
of and requirements for nutrients. Evaluation  
of feeds. Feeding practices. Formulation of  
rations for beef and dairy cattle, horses, poultry,  
sheep and swine.

**461. Principles of Animal Breeding**  
Winter. 3(3-0) CSC 250.  
Quantitative inheritance. Gene frequency. Sta-  
tistical tools used in animal breeding. Effect of  
selection and mating systems on animal popu-  
lation.

**525. Animal Nutrition**  
Winter, Summer. 5(4-2) BCH 401.  
Principles of nutrition. Nutrients and their me-  
tabolism. Nutritive requirements for mainte-  
nance, growth, reproduction, lactation and work.  
Nutrient sources and their use in preparing diets  
for domestic animals.

**826. Animal Nutrition**  
Spring. 4(4-0) One course each:  
biochemistry, physiology; and approval of de-  
partment.  
Nutrition basic to animal feeding. Application  
of chemistry and physiology to nutrition. Nutrient  
requirements for normal body functions. Tech-  
niques involved in nutrition research; readings in  
current literature.

**854. Design of Animal Experiments**  
Spring. 4(4-0) STT 423.  
Choice, implementation and statistical analysis  
of experimental plans for research with animals.  
Designs for reduction of experimental error.  
Analysis of experiments with complex structure  
or unequal subclass numbers.

**965. Biometrical Genetics**  
Fall. 4(4-0) One course in quanti-  
tative or population genetics.  
Genetic expectations in random mating and in-  
bred populations. Estimation of genetic param-  
eters. Relation of gene frequency to population  
mean and variance. Components of genetic  
variance. Correlation of relatives. Selection  
theory.

**ANTHROPOLOGY                      ANP**  
**College of Human Medicine  
College of Osteopathic Medicine  
College of Social Science**

**100. The Origin of Man and Culture**  
Fall, Winter, Spring, Summer. 4(3-1)  
Introduction to physical anthropology: the po-  
sition of man in the animal kingdom, the  
genetic mechanisms of evolution, human begin-  
nings and the fossil record, racial evolution and  
racial types among modern man, the anticipation  
of culture among other animals and the devel-  
opment of human culture, and culture as an  
adaptive mechanism.

**171. Introduction to Anthropology**  
Fall, Winter, Spring, Summer. 4(3-1)  
Comparison of ways of life among primitive,  
peasant and civilized peoples. Implications of  
these styles of life for understanding of human  
behavior in general and exotic cultures in  
particular.

**200. Resource Ecology and Man**  
For course description, see Interdisci-  
plinary Courses.

**221. Introduction to Social and  
Cultural Analysis**  
Fall, Spring. 4(3-1) 171.  
Basic theoretical framework of socio-cultural  
analysis: structural functionalism, evolutionism,  
and cultural ecology.

**250. Culture, Environment and  
Adaptation**  
Fall. 4(3-1) 100.  
Culture as an adaptive process—as developed in  
the million years of human history and still  
influencing environmental quality, population  
control, and allocation of resources in primitive  
and modern societies.

**263. Origin of Civilization:  
Archaeology**  
Spring. 4(3-0) 100.  
The rise, development and spread of culture in  
the period before written history. Archaeological  
evidence is used to trace the evolution of culture  
as it has been reconstructed from the excavation  
of pre-historic sites in the Old and New World.

**275. The Anthropology of Asia**  
Fall. 4(3-0) Sophomores or approval  
of department.  
Several cultural complexes and cultures types—  
from hunting and gathering through complex  
civilization—of East, Southeast, and South Asia.  
The cultures and nature of their development  
will be examined. Past and present significance  
of cultural stability and change will be seen  
in a comparative framework.

**281. The Africans and Their Cultures**  
Fall, Spring. 4(3-0) Sophomores or  
approval of department.  
Racial and cultural problems confronting the  
African peoples.

**285. Anthropology and the Modern  
World**  
Spring. 4(2-2) 171.  
Interwoven nature of cultural traditions in the  
modern world. Consideration of how people of  
developing nations respond to the dominant  
cultural forces of industrialized nations.

**350. Peasant Society**  
Fall. 4(3-1) 171.  
Anthropological study of peasantry. Compara-  
tive examination of the rural societies and  
cultures of Asia, Europe, and Latin America.

**356. Culture, Health and Illness**  
Spring. 4(3-1) 171.  
Anthropological study of health behavior. Com-  
parative view of primitive, folk and scientific  
medical systems and their effect on the in-  
dividual and the community in the illness situa-  
tion.

**381. Anthropology and Education**  
Winter. 4(3-1) 171 or other Social  
Science. For Education and Anthropology  
majors.  
Maturation and socialization in various societies  
of Asia, Africa, and Latin America. These will  
be compared with educational institutions in the  
U.S. and Europe. It is expected to be a con-  
tribution to the broader cross-cultural investi-  
gation of the teaching/learning process.

**384. Contemporary Problems of Japan**  
For course description, see Interdisci-  
plinary Courses.

**387. Ethnicity and Nation Building**  
Spring. 4(2-2) 171.  
Ethnic minorities and the roles they play in  
fostering and/or hindering nation building  
processes in Third World countries. A theo-  
retical framework is utilized to compare sys-  
tematically these roles in various areas of the  
world.

**389. Continuing Revolution in China:  
Problems and Approaches**  
For course description, see Interdisci-  
plinary Courses.

**390. Survey of Subsaharan Africa**  
For course description, see Interdisci-  
plinary Courses.

**391. Survey of Subsaharan Africa**  
For course description, see Interdisci-  
plinary Courses.

**400H. Honors Work**  
Fall, Winter, Spring, Summer. 1 to  
16 credits. May re-enroll for a maximum of 20  
credits. Approval of department.

**411. Studies in the Anthropology of  
Asia**  
Fall, Winter, Spring. 4(3-0) May re-  
enroll for credit for Part II in an area and/or  
for another area. 171; 275 or approval of de-  
partment.  
Separate courses in Asian cultures: China; Ja-  
pan; Southeast Asia; South Asia; Central Asia.  
A two part course sequence is usually given.  
Part I: Ethnographic survey. Part II: Sub-areas,  
special problems and approaches.

**415. Studies in the Anthropology of Africa**

Winter, Spring. 4(3-0) May re-enroll for credit for Part II in an area and/or for another area. 171; 281 or approval of department.

Separate courses on African cultures: West Africa; Central Africa; East Africa. A two part course sequence is usually given. Part I: Ethnographic survey. Part II: Sub-areas, special problems and approaches.

**419. Studies in the Anthropology in the New World**

Fall, Winter, Summer. 4(3-0) May re-enroll for credit for Part II in an area and/or for another area. 171 or approval of department.

Separate courses on New World cultures: Arctic; North America; Middle America; South America. A two part course sequence is usually given. Part I: Ethnographic survey. Part II: Sub-areas, special problems and approaches.

**423. Studies in the Anthropology of the Near East**

Winter, Spring. 4(3-0) May re-enroll for credit for Part II in an area and/or for another area. 171 or approval of department.

Separate courses on Near East cultures: North Africa and Southwest Asia. A two part course sequence is usually given. Part I: Ethnographic survey. Part II: Sub-areas, special problems and approaches.

**434. Ethnic Minorities Around the World**

Spring. 4(3-0)

Examination of ethnic minorities, their problems and patterns of adaptation in Asia, Africa and Latin America. Emphasis is placed on social structure of the minorities and the dominant attitudes of both the majority and minority peoples.

**444. Races of Man**

Fall of odd-numbered years. 3(3-0)

100.

Origins and evolutionary meaning of human physical variability. Racial variation as an adaptive phenomenon. Roles of genetic and environmental influences in creating the phenotype.

**445. Fossil Man**

Winter of odd-numbered years. 3(3-0)

100.

Fossil evidence and theory pertaining to human evolution during the last four million years.

**446. Primatology**

Spring. 3(3-0) 100.

The order primates: evolution, taxonomy, biology, and behavior. Primate learning, cultural, sexual, maternal, and aggressive behavior; and social organization.

**450. Area Courses in Prehistory**

Fall, Winter. 4(4-0) 100 or 171, and 263; 6 additional credits in anthropology.

Archaeology of different areas with emphasis on prehistoric adaptations to natural and social environments. Settlement patterns, subsistence, technology, and style will be considered. Areas covered will vary with staff and student interest.

**463. Social Anthropology**

Fall. 4(3-0) 171 or approval of department.

Organization and structure of non-Western societies, ranging from simpler tribal and peasant societies to complex civilizations. Social institutions, such as those based upon kinship, sex, age and status, analyzed for specific groups.

**464. Religion and Culture**

Winter. 4(3-0) 171 or SOC 241 or approval of department.

Religious beliefs and magical practices of primitive peoples and functions of magic and folklore in contemporary society. Religion as an institution in society.

**466. Cross-Cultural Relations in the Modern World**

Winter of even-numbered years. 3(3-0)

473. Interdepartmental with the Sociology Department.

Relationship of native peoples to world-wide forces and reactions of native peoples to world struggle for power. Problems involved in administration of programs for non-Western societies.

**467. Language and Culture**

Fall, Spring. 4(3-0) Approval of department. Interdepartmental with the English Department.

A survey exploring the interconnectedness of language and culture. Special areas to be emphasized include: Child Language Learning; Linguistic and Cultural Contact Phenomena; "Specialized" Languages, such as Cant, Argot, Trade Jargon, Lingua Franca; "Hybridization" and "Substratum"; Language and Cultural Change; a brief examination of Theories of Origins and of the Sapir-Whorf Hypothesis.

**469. Cultural Areas of the World**

Winter, Summer. 4(3-0) May re-enroll for credit when new area is given. 100 or 171 or SOC 241 or approval of department.

Social character of people, social organization, culture of area in relationship to social heritage, local conditions and world affairs. Areas emphasized will vary with staff and student's interest: Africa, American Indian, Latin America, Near East, Northeast Asia, Pacific, and Southeast Asia.

**473. Culture and Personality**

Fall, Spring, Summer. 4(3-0) 171 or SOC 241. Interdepartmental with the Sociology Department.

Human nature in evolutionary and cross-cultural perspective. Special attention to relating theories of anthropology and psychology to methods of studying personality in non-Western societies.

**474. Culture and Economic Behavior**

Winter. 4(4-0) 463 or approval of department.

Economic systems of changing cultures in Asia, Africa and Latin America. The cultural matrix of economic transactions and relations of economic and other social and cultural institutions seen in a comparative framework. Emphasis is placed on traditional agricultural or tribal communities.

**475. Culture and Political Behavior**

Spring. 4(4-0) 463 or approval of department.

Political systems of changing cultures in Asia, Africa and Latin America. Relation between political and other social institutions and analysis of the organization of conflict in non-Western societies. The relation of tribal and peasant politics to national politics in developing countries seen in a comparative framework.

**476. Canadian-American Studies**

For course description, see Interdisciplinary Courses.

**821. Evolution of Man**

Fall. 5(3-3) Approval of department.

Intensive review of biological and cultural evolution of man, with emphasis placed on anatomy, ethnology, polymorphism, genetics, cultural ecology, prehistory, and the development of civilization.

**825. Seminar in Cross-Cultural Relations**

Winter of odd-numbered years. 4(3-0) Approval of department. Interdepartmental with the Sociology Department.

Analysis of the relations between superordinate and subordinate societies and between coordinate societies and cross-cultural exchange programs.

**826. Ethnology of Selected Areas**

Fall, Spring. 4(3-0) May re-enroll for a maximum of 16 credits. Approval of department.

Intensive review of ethnology of selected culture areas with emphasis on current anthropological problems of that area.

**827. Contemporary Theories in Anthropology**

Winter. 4(4-0) May re-enroll for credit with approval of department. Approval of department.

Review of current theoretical problems in social and cultural anthropology.

**828. Social Structure**

Spring. 5(5-0) Approval of department.

Intensive analysis of theoretic models of social structure and their applicability for the analysis of cultures.

**829. History of Anthropological Theory**

Fall. 5(5-0) Approval of department.

A review of the various schools of thought, important personalities, and principal concepts that have contributed to the development of anthropological theory.

**831. Linguistic Anthropology**

Winter. 5(3-2) Approval of department.

The nature of language; techniques for the description and comparison of languages; linguistics as an anthropological tool; language and culture.

**833. Anthropological Problems of Prehistory**

Spring. 5(3-2) Approval of department.

100.

Relation of archaeology to the other fields of anthropology on both a theoretical and practical level. Archaeological data are used to introduce problems of long-range cultural change and development.

**835. Human Osteology and Osteometry**

Fall of even-numbered years. 5(3-4) 821 or ANT 540.

Identification of human bones and fragments; aging, sexing and determining the race of skeletal remains; measuring techniques for cranial and postcranial remains; the more common forms of paleopathology.

**836. Hominid Paleontology**

Winter of even-numbered years. 4(3-1)

821.

Seminar requiring student research of general and specific topics of hominid paleontology, events, trends, and processes in hominid evolution.

**838. Interdisciplinary Seminar on Africa**

For course description, see Interdisciplinary Courses.

**850. Archaeological Methods and Techniques**

Winter. 4(4-0) 833 or approval of department.

Seminar outlining archaeological method and the role of technique in the strategy of archaeology. Techniques and problems of informational retrieval will be emphasized.

**856. Methodology of Anthropological Research**

Spring. 1 to 12 credits. Approval of department.

Seminar in problems of anthropological investigation considered in the framework of history and philosophy of science. Relevance of various field techniques, methods of data gathering and data handling, and strategies of analysis for various problems are treated.

**865. Environment, Technology, and Culture**

Spring. 4(3-0) Approval of department.

Cultural ecology, study of the relation of man and his physical environment, the role of technology in mediating between the two. Comparative analysis of the interdependence of social organization, technology and environment. Case histories of cultural and social change arising from technological innovations.

**870. Applied Anthropology**

Spring of odd-numbered years. 4(3-0) Approval of department.

Theoretical and methodological problems involved in planned social change. Course will focus on field experience in the local community. Designed mainly for graduate students having professional interest in the application of social change.

**872. Seminar in Special Subject Fields**

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

Special fields of study will include any area of anthropology selected.

**875. Individual Research Projects**

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**880. Individual Readings**

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**899. Research**

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**922. Dimensions of Culture**

Winter. 5(5-0) Approval of department.

Intensive review of principles of cultural anthropology, ethnology, and cultural change with particular attention to systems theory and interconnections of cultural, social, personality, and ecological systems.

**923. Cultural Dynamics**

Spring. 5(3-2) Approval of department.

Intensive review of culture change theories, processes of the development of the self, contemporary cultural movements, and the application of anthropological knowledge.

**999. Research**

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**ART****College of Arts and Letters****History of Art****H A****205. Introduction to Art**

(ART 205.) Fall, Winter, Spring. 3(3-0) Not open to majors.

Painting, sculpture and architecture from the time of the Greeks to the present. Individual works of art examined intensively, as regards both their formal qualities and the manner in which they exemplify the shifting patterns of Western culture.

**206. History of Western Art**

(ART 266.) Fall. 4(4-0)

Painting, sculpture, architecture and decorative art from prehistoric to modern times. Provides acquaintance with the forms of art typical of each period and indicates the aesthetic qualities which give them artistic significance. Work in first term covers Prehistoric, Egyptian, Mesopotamian, Greek, Roman, Early Christian and Byzantine periods.

**207. History of Western Art**

(ART 267.) Winter. 4(4-0)

Continuation of 266. Early Medieval, Romanesque, Gothic, Renaissance and Mannerist periods.

**208. History of Western Art**

(ART 268.) Spring. 4(4-0)

Continuation of 267. Baroque, Rococo, Neo-Classical and subsequent periods to contemporary art.

**400H. Honors Work**

(ART 400H.) Fall, Winter, Spring, Summer. 1 to 6 credits. Approval of department.

**404. Greek Art**

(ART 450.) Winter. 4(3-0) 206 or approval of department.

The history of painting, sculpture and architecture of ancient Greece from the Bronze Age through the end of the Hellenistic period.

**405. Roman Art**

(ART 451.) Spring. 4(3-0) 206 or approval of department.

The history of painting, sculpture and architecture of Ancient Rome with major emphasis on the Late Republic and Early Empire.

**406. Ancient Painting**

(ART 452A.) Spring of odd-numbered years. 4(3-0) 206 or approval of department.

Ancient Greek and Roman painting, including Minoan Crete. Special emphasis is placed on Archaic and Classical Greek painting on pottery and on Roman wall painting from Pompeii and elsewhere.

**407. Ancient Sculpture**

(ART 452B.) Fall of odd-numbered years. 4(3-0) 206 or approval of department.

The sculpture of Ancient Greece and Rome, from the Bronze Age through Early Christian times.

**408. Ancient Architecture**

(ART 452C.) Winter of even-numbered years. 4(3-0) 206 or approval of department.

The architecture of Ancient Greece and Rome, from Mycenaean times to the 6th century A.D., with special emphasis on the religious architecture of Classical Greece and Imperial Rome.

**410. Byzantine Art**

(ART 454.) Fall, Summer. 4(3-0) 206 or approval of department.

Late antique painting, sculpture and architecture and their development in the East Christian Empire and Orthodox Russia.

**411. Early Medieval Art**

(ART 455.) Winter, Summer. 4(3-0) 207 or approval of department.

History of architecture, sculpture, and painting in the Latin West from Hiberno-Saxon art of the 7th century to the Romanesque Abbeys of the 12th century.

**412. Later Medieval Art**

(ART 456.) Spring, Summer. 4(3-0) 207 or approval of department.

Gothic painting, sculpture, and architecture with particular emphasis on the cathedrals of the 13th century.

**420. Italian Renaissance Architecture**

(ART 485.) Spring. 4(3-0) 207 or approval of department.

Important buildings of the 15th and 16th centuries, architectural theories, and architectural representations in drawings and paintings.

**421. Italian Renaissance Sculpture**

(ART 484.) Winter. 4(3-0) 207 or approval of department.

Major artists from circa 1250 to 1600.

**422. Italian Renaissance Painting—Fifteenth Century**

(ART 460A.) Fall. 4(3-0) 207 or approval of department.

Developments in Italian painting, especially Florentine, of the 14th and 15th centuries, with emphasis on 15th century masters such as Masaccio, Piero della Francesca and Botticelli.

**423. Italian Renaissance Painting—Sixteenth Century**

(ART 460B.) Spring. 4(3-0) 207.

Emphasis on Leonardo, Michelangelo, Raphael, Titian, Tintoretto, and other important masters of the High and Late Renaissance.

**427. Northern Renaissance Painting**

(ART 461.) Fall, Summer. 4(3-0) 207 or approval of department.

The two centuries paralleling the Renaissance in Italy; the Van Eycks and their school, the French and German masters.

**430. Seventeenth and Eighteenth Century Art in Italy**

(ART 466A.) Fall of odd-numbered years. 4(3-0) 208 or approval of department.

Art and architecture of Italy in the 17th and 18th centuries; Caravaggio, the Carracci, Bernini, Borromini, Guarini, Juvvara, Piazzetta, Tiepolo, Piranesi, Guardi.

**431. Seventeenth Century Art in Flanders and Spain**

(ART 466B.) Fall of even-numbered years. 4(3-0) 208 and approval of department.

Painting and sculpture in the Spanish Netherlands and Spain during the 17th century: Rubens, Van Dyck, Jordaens, Zurbaran, Montanes, Velazquez, Murillo and still life and genre specialists.

**433. Seventeenth Century Dutch Art**

Winter of odd-numbered years. Spring of even-numbered years. 4(3-0) 208 or approval of department.

Art and architecture of the Northern Netherlands during "The Golden Age" with emphasis on paintings of Rembrandt, Vermeer, Hals and genre, still-life and landscape specialists.